

REMARKS

Amendments to claims 1 and 9 are for the purpose of clarifying what Applicant regards as the invention. Amendments to claims 29 and 35 are to explicitly recite what was already inherent in these claims. No new matter has been added.

I. Claim Rejections based on Mazess and Frank

Claims 1, 2, 6-9, 11, 13-17, and 46 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 5,841,833 (Mazess) in view of U.S. Patent No. 6,445,765 (Frank).

Claims 1 and 9

Claim 1 has been amended to recite that the first and second scintillating materials for respective first and second imaging elements of a detector assembly have *different compositions* (Emphasis Added). Claim 9 has been amended to recite that the first and second materials for respective first and second conversion elements of a conversion panel have *different compositions* (Emphasis Added). Applicant respectfully submits that the amendments to claims 1 and 9 render the § 103 rejection based on Mazess and Frank moot. In particular, Mazess discloses high energy detector 37(a) and low energy detector 37(b) that are made from respective separate materials 308, 312 having the *same* composition (as indicated by the same type of shading in figures 22, 23). Thus, in Mazess, the difference in the energy detectors 37(a), 37(b) is achieved by varying the thickness of the material that is used to form the detectors, and not by using different materials with different compositions.

Frank also does not disclose or suggest that different imaging elements of a *detector assembly*, or different conversion elements of a *conversion panel*, be made from different materials with different compositions. Rather, Frank discloses that *two* detectors can have different respective chemical compositions (column 1, lines 10-24), but does not disclose or suggest that different imaging elements in either of the two detectors be made from different materials. Since both Mazess and Frank fail to disclose or suggest the above limitations, they cannot be combined to form the subject matter of the above claims.

For at least the foregoing reasons, claims 1 and 9, and their respective dependent claims, are believed allowable over the cited references.

Claim 17

Claim 17 recites an access circuit coupled to the photo detector array and configured to collect signals from two or more of the lines of the detector elements *simultaneously* (Emphasis Added). According to the Office Action, column 2, lines 47-57 of Mazess allegedly disclose the above limitation. However, this passage of Mazess discloses a detector that may include a scanning assembly, wherein the scanning assembly moves the detector perpendicularly to the rows. There is nothing in this passage of Mazess that discloses or suggests an access circuit configured to collect signals from two or more lines of detector elements *simultaneously*. For this additional reason, claim 17 is believed allowable.

II. Claim Rejections based on Bogatu and Barnes

Claims 4, 5, 18-23, 25-28, 41, 45, and 47-55 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2002/0191751 (Bogatu) in view of U.S. Patent No. 5,138,167 (Barnes).

Claims 18, 41, and 52

Claim 18 recites that the plurality of *first photoconductor elements* and the plurality of *second photoconductor elements form a surface* (Emphasis Added). Claim 41 recites that the plurality of *first imaging elements* and the plurality of *second imaging elements form a surface* (Emphasis Added). Claim 52 recites a plurality of first imaging elements made from a first photoconductor that has a first radiation detection characteristic, and a plurality of second imaging elements made from a second photoconductor that has a second radiation detection characteristic, wherein *one of the plurality of first imaging elements and one of the plurality of second imaging elements are arranged side-by-side* (Emphasis Added).

Applicant agrees with the Examiner that Bogatu does not disclose an imaging layer having different imaging elements. According to the Office Action, Barnes allegedly discloses different semiconductor materials, and therefore, it would have been allegedly obvious to modify Bogatu to include different semiconductors as that taught by Barnes to improve detection accuracy and sensitivity. However, Applicant respectfully notes that Barnes specifically teaches providing two layers of detector elements (i.e., to form a “front and rear” configuration - see column 11, line 52, and figure 2) so that low energy is absorbed by the first layer, and high

energy is transmitted through the first layer and absorbed by the second layer (column 4, line 67 to column 5, line 4). Thus, in view of the specific teaching of Barnes that require layer 28 be behind layer 26, one of ordinary skill in the art would not use Barnes to modify Bogatu by selecting a material from the first layer 26 of Barnes, and selecting a second material from another layer 28 of Barnes, and placing them on the same layer 22' of Bogatu. For at least the foregoing reasons, claims 18, 41, and 52, and their respective dependent claims, are believed allowable over Bogatu, Barnes, and their combination.

In addition, Applicant respectfully submits that there must be some motivation or suggestion to modify the reference as alleged in the Office Action. Such motivation may come from knowledge within the art (*See KSR International Co. v. Teleflex Inc. et al*, No. 04-1350 (Supreme Court 2006)), e.g., by showing (1) that there is a problem that is known in the art, and (2) that the element that is being combined does solve the known problem. Here, there is no showing that the device of Bogatu has accuracy and sensitivity problems that are known in the art, nor is there any showing in the record that the alleged modification of the device of Bogatu does in fact address such alleged accuracy and sensitivity problems.

Furthermore, according to the Office Action, the test for obviousness is what the combined teachings of the references would have suggested to those of ordinary skill in the art. As discussed, the combined teachings of Bogatu and Barnes do not disclose or suggest selecting a material from the first layer 26 of Barnes, selecting a material from another layer 28 of Barnes, and playing them on the same layer 22' of Bogatu. In fact, there is nothing in the record, other than Applicant's own teaching in the subject application, that teaches forming a surface or a side-by-side configuration using different photoconductor / imaging elements. However, Applicant's own teaching in the subject application cannot be used in hindsight to support a § 103 rejection.

For at least the foregoing reasons, Applicant respectfully submits that the prima facie case of § 103 rejection has not been established, and requests that the § 103 rejection be withdrawn.

Claim 22

Claim 22 (together with base claim 21) recites that the first photoconductor elements are configured for generating charges in response to radiation at a first energy level, and the second photoconductor elements are configured for generating charges in response to radiation at a

second energy level, wherein the first energy level is below a k-edge of a contrast agent, and the second energy level is above a k-edge of a contrast agent. According to the Office Action, paragraph 44 of Bogatu allegedly discloses a filter pair having different filters for successively filtering each beam according to the k-edge. However, Applicant respectfully notes that paragraph 44 of Bogatu discloses a filter set with filters 32, 34. There is nothing in paragraph 44 of Bogatu that discloses or suggests that the filters 32, 34 are respective first and second *conversion elements* for generating light photons in response to radiation at respective above and below a K-edge energy level. Barnes also does not disclose or suggestion the above limitations and therefore fails to make up the deficiency present in Bogatu. Since both Bogatu and Barnes fail to disclose or suggest the above limitations, they cannot be combined to form the subject matter of claim 12. For at least the foregoing reason, claim 12 is believed allowable over Bogatu, Barnes, and their combination.

Claims 23 and 42

Claim 23 recites that the plurality of the first and the second *photoconductor elements* are arranged relative to each other in a checkerboard pattern (Emphasis Added). Claim 42 recites similar limitations. According to the Office Action, paragraph 46 of Bogatu allegedly discloses the above limitations. However, paragraph 46 of Bogatu discloses a detector array 22' with detector elements 76. There is nothing in paragraph 46 of Bogatu that discloses that the detector elements 76 are different *photoconductor elements* that are arranged in a *checkerboard pattern*. Notably, Bogatu also discloses a filter set 74 having filters 32, 34 that form a checkerboard pattern (figure 8B). However, there is nothing in Bogatu that discloses or suggests that the filters 32, 34 are photoconductor elements. For this additionally reason, claims 23 and 42 are believed allowable over the cited references.

Claim 27

Claim 27 recites an access circuit coupled to the photo detector array and configured to collect signals from two or more of the lines of the detector elements *simultaneously* (Emphasis Added). According to the Office Action, paragraph 46 of Bogatu allegedly discloses that each detector is electrically wired to a computer to allow the signals generated by the detectors to be processed. However, there is nothing in the cited passage of Bogatu that discloses or suggests an

access circuit configured to collect signals from two or more lines of detector elements *simultaneously*. For this additional reason, claim 27 is believed allowable.

III. Claim Rejections based on Bogatu and Barnes

Claims 29, 31, 32, 34, 35, 37, 38, and 40 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2002/0191751 (Bogatu) in view of EP 1016881 (Maekawa).

Claim 29

Claim 29 has been amended to recite a *photoconductor layer for generating electron-hole-pairs in response to radiation*, the photoconductor layer aligned with the first and the second filters (Emphasis Added). According to the Office Action, figures 8a-8c of Bogatu allegedly disclose a photoconductor layer. However, figures 8a-8c of Bogatu actually discloses a detector array 22' having detector elements 76 for producing electrical signal in response to radiation. There is nothing in Bogatu that discloses or suggests that the detector array 22' is a photoconductor layer for generating electron-hole-pairs in response to radiation. For at least the foregoing reason, claim 29 and its dependent claims are believed allowable over Bogatu, Maekawa, and their combination.

Claim 35

Claim 35 has been amended to recite a *conversion layer for generating photons in response to radiation*, the conversion layer aligned with the first and the second filters (Emphasis Added). According to the Office Action, figures 8a-8c of Bogatu allegedly disclose a conversion layer. However, figures 8a-8c of Bogatu actually discloses a detector array 22' having detector elements 76 for producing electrical signal in response to radiation. There is nothing in Bogatu that discloses or suggests that the detector array 22' is a conversion layer for generating photons in response to radiation. For at least the foregoing reason, claim 35 and its dependent claims are believed allowable over Bogatu, Maekawa, and their combination.

IV. Claim Rejections based on Mazess and Bogatu

Claim 12 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Mazess in view of Bogatu.

Claim 12 (together with base claim 11) recites that the first conversion elements are configured for generating light photons in response to radiation at a first energy level, and the second conversion elements are configured for generating light photons in response to radiation at a second energy level, wherein the first energy level is below a k-edge of a contrast agent, and the second energy level is above a k-edge of a contrast agent. Applicant agrees with the Examiner that Mazess does not disclose or suggest the above limitations. According to the Office Action, paragraph 13 of Bogatu allegedly discloses filters with lower and higher energies correlating to lower and above the K-edge agent. However, Applicant respectfully notes that paragraph 13 of Bogatu discloses placing a filter pair between an X-ray source and an object. There is nothing in paragraph 13 of Bogatu that discloses or suggests that the filter pair has respective first and second *conversion elements* for generating light photons in response to radiation at respective above and below a K-edge energy level. Since both Mazess and Bogatu fail to disclose or suggest the above limitations, they cannot be combined to form the subject matter of claim 12. For at least the foregoing reason, claim 12 is believed allowable over Mazess, Bogatu, and their combination.

CONCLUSION

Based on the foregoing, all claims are believed in condition for allowance. If the Examiner has any questions or comments regarding this amendment, please contact the undersigned at the number listed below.

Applicant(s) hereby explicitly retracts and rescinds any and all of the arguments and disclaimers presented to distinguish the prior art of record during the prosecution of all parent and related application(s)/patent(s), and respectfully requests that the Examiner re-visit the prior art that such arguments and disclaimers were made to avoid.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Bingham McCutchen's Deposit Account No. **50-4047**, referencing billing number **7036492003**. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Bingham McCutchen's Deposit Account No. **50-4047**, referencing billing number **7036492003**.

Respectfully submitted,

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Bingham McCutchen LLP
Three Embarcadero Center
San Francisco, California 94111
Telephone: (650) 849-4960
Facsimile: (650) 849-4800

By: 

Gerald Chan
Reg. No. 51,541